



# Committee On Finance

Max Baucus, Chairman

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For Immediate Release  
Tuesday, February 27, 2007

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## **Floor Statement of Senator Max Baucus (D-Mont.) Regarding the Introduction of the ARPA-E Bill**

Mr. President, energy is once again one of the top two or three domestic issues facing the Congress this year.

Prices for gasoline, heating oil, electricity, and natural gas have soared in recent years, hitting working families hard. Our energy security has been threatened on many fronts: We have seen a terrorist attack on Saudi Arabian oil facilities, oil workers kidnapped in Nigeria, Venezuelan President Hugo Chavez threatened to cut off our supply of oil from his country, and some question whether Iran's role as an oil supplier keeps other countries from properly addressing Iran's nuclear proliferation threat. Recently we learned that Russia and Iran are talking about creating an OPEC-like organization for natural gas — a cartel that could put even more pressure on natural gas prices.

Energy provides one of America's greatest challenges for the 21st century. Our economy has been dependent on oil and coal for about 100 years. And since World War II, natural gas has become part of the equation. Will we continue to rely on these energy sources for the next 100 years?

The cost of energy will profoundly affect the future competitiveness of the American economy. As the Chinese and Indian economies grow, so will their demand for energy. And that will add further upward pressure to energy prices.

Global climate change is another issue that demands that we take a fresh look at our energy future. While we address the issue of energy security, we must also keep an eye on the effect that new energy development will have on carbon dioxide emissions and global warming.

We are essentially trapped in an energy box. It is a box characterized by high imports, wildly fluctuating prices for oil and natural gas, and environmental danger. As a nation, we must experiment with ways to break out of that box. To break out, we need an energy research effort modeled after the Manhattan project, or the Apollo mission to the moon.

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America has a brilliant record of gathering the best minds. We have consistently met challenges that at first seemed to be impossible. During World War II, the Manhattan project brought together brilliant physicists and engineers to build an atomic bomb in three short years. And after President Kennedy described his vision to a joint session of Congress in May of 1961, the Apollo space program put a man on the moon in just eight years.

Looking back, these achievements look stunning. Both projects started out with no guarantee of success. Each could have ended in utter failure. Yet because of the talent, ingenuity, and focus of creative minds, they both succeeded.

Breaking out of the energy box poses a similar challenge. Success is not guaranteed. But we have got to give it our best shot.

Today I am reintroducing legislation to create an ARPA-E, Advanced Research Projects Agency — Energy. My legislation would create a new energy research agency to help our nation face the challenges of a newly competitive global economy. It will help us to move into a new energy future.

We have the greatest research scientists on the planet. We have the most technically-talented workforce in the world. But we do not have the vigor that we need in energy research. Energy research is a backwater, compared to other research efforts in biotechnology, medicine, computers, and defense-oriented projects.

With the Manhattan project and the Apollo space program, America proved that we can gather the best talent for a focused mission and succeed. It is time that we began a similar effort on energy.

We need to create a new agency to initiate cutting-edge, innovative energy research and development aimed at taking us to a new energy future. Doing so is essential to our effort to improve our economic competitiveness.

The new agency is modeled on DARPA — the Defense Advanced Research Projects Agency — in the Department of Defense. Among the revolutionary technologies that DARPA has developed are the internet and stealth technology for aircraft. DARPA has been a tremendous success.

The National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine joined to form the Committee on Prospering in the Global Economy of the 21st Century. Norm Augustine chaired the Committee. Based on DARPA's achievements, the Committee recommended the creation of an ARPA-E: Advanced Research Projects Agency — Energy.

This was one of a number of recommendations that the Committee made in its impressive 2005 report on the future competitive challenges that America faces. The Committee recommended that ARPA-E be designed to conduct transformative, out-of-the-box energy research.

My bill proposes that ARPA-E be a small agency with a total of 250 people. A minimum of 180 of them would be technical staff. A director of the agency and four deputies would lead ARPA-E. I propose that ARPA-E be funded at \$300 million in fiscal year 2008, \$600 million in 2009, \$1.1 billion in 2010, \$1.5 billion in 2011, and \$2.0 billion in 2012.

We would require that the staff have a technical background. The agency would use the Experimental Personnel Authority designed for DARPA. That authority authorizes higher salaries than for typical Federal employees, and faster hiring, so that the agency could get to work quickly.

To keep the intense, innovative focus that we want, technical staff would be limited to three to four years at the agency. Managers would be limited to four to six years. The director could give both groups extended terms of employment if the director so chose.

For contracts, the agency would use the DARPA procedure. That procedure allows more flexible contracting arrangements than are normally possible under the Federal Acquisition Regulations. To ensure that ARPA-E would conduct innovative research, 75 percent of research projects initiated by ARPA-E would not be peer reviewed.

The ARPA-E would be authorized to award cash prizes to encourage and accelerate energy research accomplishments.

Finally, the bill would require a report by the end of fiscal year 2008 on whether ARPA-E would need its own energy research lab.

Congress enacted an important companion piece to ARPA-E last December in the Tax Relief and Health Care Act of 2006. That law extended the credit for electricity from renewable resources, added \$400 million to the Clean Renewable Energy Bond program, extended the deduction for energy efficient buildings and the credit for energy efficient homes, and provided incentives for cellulosic biomass ethanol facilities.

On the energy agenda this year is consideration of President Bush's proposal to increase Federal targets for use of renewable and alternative fuels. And additional tax incentives to encourage the development and use of alternative energy are being contemplated.

We are seeing exciting new efforts in America to strengthen our energy competitiveness. We need to build on this foundation by creating an aggressive energy research agency that will push the limits of new technology and discover alternative energy sources.

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America has massive coal reserves. So coal gasification is receiving greater attention. Gasification involves breaking down coal under heat and pressure to create synthetic natural gas. We must address the environmental issues. But if this technology can be improved, then America will be able to take a huge step toward energy independence.

There are exciting developments in wind energy. In Montana, the Judith Gap Wind Farm has been generating power at full capacity, using 90 wind turbines. Each turbine can produce enough electricity for roughly 400 homes. The entire farm can produce the electricity needed to supply 300,000 customers. And my state ranks in the top 15 states in the Nation for wind power capacity. Nationwide, wind power generating capacity increased 27 percent in 2006.

Fusion is another possible area where aggressive research could lead to huge payoffs. Continuing research will help us to determine whether energy production through fusion is a practical option.

Ethanol is also gaining as an alternative energy option. The Nation's first cellulosic ethanol pilot facility has opened in Jennings, Louisiana. This 1.4 million gallons-per-year, demonstration-scale facility will produce cellulosic ethanol from sugarcane plant residue and specially-bred energy cane by the end of 2007.

There are also exciting developments in nanotechnology, solar power, energy-efficient materials, biomass, and green buildings.

All of these are examples of possible directions for our Nation's energy future. But we need a more aggressive and focused research and development effort to push these alternatives. And we need an effort to create scientific breakthroughs to supplement existing technologies.

We have got to give it our best shot. As President Franklin Roosevelt said, we must conduct "bold, persistent experimentation."

Our economic security is at stake. Our ability to compete in the new world economy is at stake.

ARPA-E will help us to move forward on existing technologies. It will help us to find new technologies that are not even imaginable today.

I urge my Colleagues to look closely at this legislation.

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